



**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2021-0875; Project Identifier AD-2021-00675-E; Amendment 39-21945; AD 2022-04-04]**

**RIN 2120-AA64**

**Airworthiness Directives; Continental Aerospace Technologies, Inc. and Continental Motors Reciprocating Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain Continental Aerospace Technologies, Inc. C-125, C145, IO-360, IO-470, IO-550, O-300, O-470, TSIO-360, TSIO-520 series model reciprocating engines and certain Continental Motors IO-520 series model reciprocating engines with a certain oil filter adapter installed. This AD was prompted by reports of two accidents that were the result of power loss due to oil starvation. This AD requires replacing the oil filter adapter fiber gasket (fiber gasket) with an oil filter adapter copper gasket (copper gasket). The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this final rule, contact Stratus Tool Technologies, LLC, 2208 Air Park Drive, Burlington, NC 27215; phone: (800) 822-3200; website: <https://www.tempestplus.com>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA,

call (817) 222-5110. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0875.

### **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0875; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** George Hanlin, Aviation Safety Engineer, Atlanta ACO, FAA, 1701 Columbia Avenue, College Park, GA 30337; phone: (404) 474-5584; fax: (404) 474-5605; email: [george.hanlin@faa.gov](mailto:george.hanlin@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain Continental Aerospace Technologies, Inc. (Type Certificate previously held by Continental Motors, Inc., and Teledyne Continental Motors) C-125-1, C-125-2, C145-2, C145-2H, IO-360-C, IO-360-D, IO-360-DB, IO-360-H, IO-360-HB, IO-360-K, IO-360-KB, IO-470-E, IO-470-S, IO-550-B, IO-550-G, O-300-B, O-300-C, O-300-D, O-300-E, O-470-A, O-470-B, O-470-G, O-470-J, O-470-K, O-470-L, O-470-M, O-470-N, O-470-R, O-470-S, O-470-U, O-470-11, O-470-15, TSIO-360-E, TSIO-360-EB, TSIO-360-F, TSIO-360-FB, TSIO-360-GB, TSIO-360-LB, TSIO-360-MB, TSIO-360-SB, TSIO-520-C, TSIO-520-CE, TSIO-520-E, TSIO-520-UB model reciprocating engines; and Continental Motors (Type Certificate previously held by Teledyne Continental Motors) IO-520-A, IO-520-B, IO-520-BA, IO-520-BB, IO-520-C, IO-520-D, IO-520-J, and IO-520-L model reciprocating engines. The NPRM published in the *Federal Register* on October 12, 2021 (86 FR 56658). The NPRM was prompted by reports of two accidents that were the result of power loss due to oil starvation. The first was a fatal accident on May 1, 2019, in Mill Creek California,

involving a Cessna 182P airplane with an installed Continental Motors O-470-S engine. The National Transportation Safety Board's preliminary accident investigation report, docket number WPR19FA126, identified evidence of improperly maintained or installed oil filter adapters. An improperly maintained or installed oil filter adapter may lead to failure of the fiber gasket, which may result in oil loss or oil starvation. Based on the investigation, the manufacturer determined the need to replace the fiber gasket with a copper gasket. In the NPRM, the FAA proposed to require removal of the fiber gasket and replacement with a copper gasket. The FAA is issuing this AD to address the unsafe condition on these products.

### **Discussion of Final Airworthiness Directive**

#### **Comments**

The FAA received comments from two individual commenters. The following presents the comments received on the NPRM and the FAA's response to each comment.

#### **Request to Broaden the Scope**

One commenter compared the NPRM to a previous AD that the FAA issued in 1996, AD 96-12-22 (61 FR 30501, June 17, 1996), to address loose or separated oil filter adapters. The commenter requested that the FAA consider issuing an AD with a broader scope, such as a remote-mounted oil filter secured to the firewall, as a more permanent solution. The commenter reasoned that a remote-mounted filter would reduce the potential for accidents caused by oil starvation and power loss.

The FAA issued AD 96-12-22 to address an unsafe condition caused by adapter-to-oil pump threads fragmenting, resulting in loose or separated oil filter adapters. Like AD 96-12-22, a remote-mounted oil filter secured to the firewall is not needed to correct the unsafe condition prompting this AD, which is power loss due to oil starvation. The unsafe condition that prompted this AD was caused by failure of the fiber gasket due to improperly maintained or installed oil filter adapters. Therefore, this AD requires replacing the fiber gasket with a copper gasket.

#### **Suggestion to a Design Better Gasket**

One commenter requested that the FAA make the manufacturer design a better gasket, installed with a torque commensurate with the torqued material, such as fiber

gasket material similar to the gaskets used in propeller governors. The commenter stated that the gaskets used in propeller governors are manufactured with an oil-resistant outer layer, a stainless steel mesh center layer, and an oil-resistant inner layer. The commenter reasoned that these gaskets would cover the entire sealing faces of the oil filter adapter and the oil pump, unlike the copper gasket, which uses only a portion of the sealing area.

The FAA does not agree that using fiber gasket material similar to the gaskets used in propeller governors is necessary to address the unsafe condition, which is power loss due to oil starvation. The unsafe condition that prompted this AD was caused by failure of the fiber gasket due to improperly maintained or installed oil filter adapters, not the amount of torque applied to a specific gasket material. Additionally, as part of the certification process, the manufacturer has analyzed and tested the copper gasket and found it meets the design intent.

## **Conclusion**

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. This AD is adopted as proposed in the NPRM.

## **Related Service Information under 1 CFR Part 51**

The FAA reviewed Stratus Tool Technologies Mandatory Service Bulletin (MSB) SB-001 Rev B, dated June 17, 2021. This MSB specifies procedures for removing a fiber gasket and replacing it with a copper gasket. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

## **Costs of Compliance**

The FAA estimates that this AD affects 6,300 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

### Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Replace fiber gasket with copper gasket	2.5 work-hours x \$85 per hour = \$212.50	\$34	\$246.50	\$1,552,950

### Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **The Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

#### **2022-04-04 Continental Aerospace Technologies, Inc. and Continental Motors:**

Amendment 39-21945; Docket No. FAA-2021-0875; Project Identifier AD-2021-00675-E.

#### **(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

None.

#### **(c) Applicability**

This AD applies to the reciprocating engine models identified in paragraphs (c)(1) and (2) of this AD with an F&M Enterprises, Inc. (F&M) or Stratus Tool Technologies, LLC (Stratus) oil filter adapter installed per Supplemental Type Certificate SE8409SW, SE09356SC, or SE10348SC.

(1) Continental Aerospace Technologies, Inc. (Type Certificate previously held by Continental Motors, Inc., and Teledyne Continental Motors) C-125-1, C-125-2, C145-2, C145-2H, IO-360-C, IO-360-D, IO-360-DB, IO-360-H, IO-360-HB, IO-360-K, IO-360-KB, IO-470-E, IO-470-S, IO-550-B, IO-550-G, O-300-B, O-300-C, O-300-D, O-300-E, O-470-A, O-470-B, O-470-G, O-470-J, O-470-K, O-470-L, O-470-M, O-470-N, O-470-R, O-470-S, O-470-U, O-470-11, O-470-15, TSIO-360-E, TSIO-360-EB, TSIO-360-F, TSIO-360-FB, TSIO-360-GB, TSIO-360-LB, TSIO-360-MB, TSIO-360-SB, TSIO-520-C, TSIO-520-CE, TSIO-520-E, and TSIO-520-UB model reciprocating engines; and

(2) Continental Motors (Type Certificate previously held by Teledyne Continental Motors) IO-520-A, IO-520-B, IO-520-BA, IO-520-BB, IO-520-C, IO-520-D, IO-520-J, and IO-520-L model reciprocating engines.

**(d) Subject**

Joint Aircraft System Component (JASC) Code 8550, Reciprocating Engine Oil System.

**(e) Unsafe Condition**

This AD was prompted by reports of two accidents that were the result of power loss due to oil starvation. The FAA is issuing this AD to prevent loss of engine power. The unsafe condition, if not addressed, could result in failure of the engine, in-flight shutdown, and loss of control of the aircraft.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

Before accumulating 50 flight hours after the effective date of this AD or at the next scheduled oil change after the effective date of this AD, whichever occurs first, remove any F&M or Stratus oil filter adapter fiber gasket from service and replace it with a Stratus AN900-28 or AN900-29 oil filter adapter copper gasket in accordance with the Compliance Instructions, paragraph 6., pages 7 through 10 (including all detailed instructions for Figure 5 through Figure 16), of Stratus Tool Technologies Mandatory Service Bulletin SB-001 Rev B, dated June 17, 2021.

**(h) Installation Prohibition**

After the effective date of this AD, do not install or reuse an F&M or Stratus oil filter adapter fiber gasket in any F&M or Stratus Tool Technologies oil filter adapter.

**(i) Special Flight Permit**

A special flight permit may be issued in accordance with 14 CFR 21.197 and 21.199 to permit a one-time non-revenue ferry flight to operate the airplane to a location where the maintenance action can be performed.

**(j) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Atlanta ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (k) of this AD.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(k) Related Information**

For more information about this AD, contact George Hanlin, Aviation Safety Engineer, Atlanta ACO, FAA, 1701 Columbia Avenue, College Park, GA 30337; phone: (404) 474-5584; fax: (404) 474-5605; email: [george.hanlin@faa.gov](mailto:george.hanlin@faa.gov).

**(l) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Stratus Tool Technologies Mandatory Service Bulletin SB-001 Rev B, dated June 17, 2021.

(ii) [Reserved]

(3) For Stratus Tool Technologies, LLC service information identified in this AD, contact Stratus Tool Technologies, LLC, 2208 Air Park Drive, Burlington, NC 27215; phone: (800) 822-3200; website: <https://www.tempestplus.com>.

(4) You may view this service information at FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.



(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on February 4, 2022.

Lance T. Gant, Director,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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